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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/235,686	01/22/99	LIU A	AC06105

IM52/0730
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EXAMINER	
JACKSON, M	
ART UNIT	PAPER NUMBER
1773	14

DATE MAILED: 07/30/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/235,686	LIU ET AL.	
	Examiner	Art Unit	
	Monique R Jackson	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11,12,16,20-22,26-29,33-35 and 39-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11,12,16,20-22,26-29,33-35 and 39-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

1. The amendment filed 5/16/01 has been entered. Claims 1-9, 11-12, 16, 20-22, 26-29, 33-35, and 39-61 are pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. The rejections under 35 U.S.C. 112, second paragraph, as recited in paragraphs 3-5 have been withdrawn in view of the amendment filed 5/16/01.

Claim Rejections - 35 USC § 103

4. Claims 1-9, 11-12, 16, 20-22, 26-29, 33-35, and 39-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al (USPN 5,456,949) in view of Takahashi et al (USPN 5,928,778) and in further view of the admitted prior art for the reason recited in the prior office action and restated below.

5. Albrinck et al teach a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance, as well as excellent appearance and cleanability and methods of producing same (Abstract.) The method of producing the decorative laminate includes impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles having a particle size of about 15 microns to about 45 microns suspended in the coating formulation (Abstract; Col. 5, line 63 - Col. 6, line 5.) The abrasion resistant material is preferably alumina with the concentration of alumina particles in the resin coating formulation dependent upon the amount of surface area which needs to be covered, however for sufficient damage resistance, the concentration should be about 8-12 grams per square meter of surface area (Col. 5, lines 3-8.)

The alumina particles should be precoated with an amino silane coupling agent (Col. 5, lines 8-10.) The resin impregnated decorative sheet is then further coated or saturated with an overcoat of a "neat" melamine formaldehyde resin coating formulation which does not contain any abrasion resistant alumina particles or in the alternative contains abrasion resistant particles that are smaller than the particles used in the first coat (Abstract; Col. 6, lines 14-20.) The damage resistant decorative laminate may be produced either with or without an intermediate drying step between the initial coating and the subsequent overcoat (Col. 6, lines 28-32.) The coated decorative paper and at least one backing sheet is dried and then heat and pressure consolidated using conventional laminating techniques into a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance as well as a uniform appearance and excellent cleanability (Col. 6, lines 33-38.) Albrinck et al further teach that conventional high pressure decorative laminates are made of two essential layers, a core layer and a surface layer, wherein the core layer normally consists of a plurality of cellulosic sheets generally made from a kraft paper impregnated with a laminating resin (Col. 1, lines 19-25.) Placed above the core layer is the decorative layer which is generally an alpha cellulose paper impregnated with a melamine-formaldehyde resin (Col. 1, lines 31-35.) The laminates are used as surfacings for counter tops, table tops, furniture, store fixtures and the like (Col. 1, lines 65-66.)

6. Albrinck et al do not specifically teach the temperature and pressure at which consolidation is performed however, as admitted by the Applicant as prior art, it is well known in the art that high pressure laminates are produced at a temperature of 230-340°F and a pressure of 800-1600 psi (Page 3, lines 1-10.) Additionally, it is well known in the art that these laminate

films are typically used as surface material for materials comprising wood, for non-limiting example, particle board, medium density fiberboard, composite panel and other wood-based materials (Page 2, lines 8-11.) Albrinck et al also do not specifically teach that the abrasion resistant particles are microspheres or substantially spherical, are present in an amount of about 0.5 to 4.75% of the thermosetting resin after drying, and provide a scratch resistance of at least about 2.5 Newtons as measured by the Teledyne Taber Scrach Tester. However, Takahashi et al teach a decorative material having abrasion or scratch resistance that comprises a substrate and an abrasion resistant coating layer formed thereon (Abstract.) Takahashi et al teach that the abrasion-resistant coating includes a crosslinkable resin and 5% to 50% by weight spherical particles having an average diameter of 3 to 50 micrometers (Abstract.) The spherical particles have a hardness greater than the resin and may be selected from fused alumina, alumina produced by the Bayer process, zirconia, titania, organic resin particles, and preferably alpha-alumina, because alpha-alumina has an extremely high hardness and can impart high abrasion resistance to the resulting coating layer and can be readily obtainable in a spherical shape (Abstract; Col. 3, lines 5-13; Col. 4, lines 32-41.) Takahashi et al specifically teach that the spherical shape of the particles provides greatly improved abrasion resistance as compared with particles in an indeterminate form made of the same material, and, at the same time, produces the following characteristic effects: the spherical particles do not wear a coating applicator used, the hardened coating layer also does not wear those things which are brought into contact with the coating layer, and the coating layer has improved transparency (Col. 4, lines 5-15.) Takahashi et al also teach that it is preferable that the hardness of the spherical particles be greater by at least 1 or more in terms of the Mohs hardness scale than the crosslinkable resin and that the spherical

particles can be inorganic or organic resin (Col. 4, lines 16-28.) The abrasion resistant coating can be applied to a number of substrates including paper, woodboards, particle board, medium density fiber board, FRP boards which are obtained by impregnating various fibrous substrates such as paper with a resin such as phenolic or melamine, or a composite substrate obtained by laminating two or more substrates (Col. 2, lines 1-67.) Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize a spherical abrasion resistant particle for it provides improved abrasion resistance and reduced machine wear as taught by Takahashi et al, for the decorative laminate taught by Albrinck et al, utilizing routine experimentation to determine the optimum particle material and the optimum weight percent of the particles in the impregnating resin to yield the desired abrasion or scratch resistance for a given end use.

7. Claims 1-9, 11-12, 16, 20-22, 26-29, 33-35, and 39-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al (USPN 5,456,949) in view of *Microspheres: Microspheres Engineered for a Wide Choice of Unique Enhancements* by 3M and Zeelan Industries, Inc. (3M and Zeelan) and in further view of the admitted prior art for the reasons recited in the prior office action and restated below.

8. Albrinck et al teach a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance, as well as excellent appearance and cleanability and methods of producing same (Abstract.) The method of producing the decorative laminate includes impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles having a particle size of about 15 microns to about 45 microns suspended in the coating formulation (Abstract; Col. 5,

line 63 - Col. 6, line 5.) The abrasion resistant material is preferably alumina with the concentration of alumina particles in the resin coating formulation dependent upon the amount of surface area which needs to be covered, however for sufficient damage resistance, the concentration should be about 8-12 grams per square meter of surface area (Col. 5, lines 3-8.) The alumina particles should be precoated with an amino silane coupling agent (Col. 5, lines 8-10.) The resin impregnated decorative sheet is then further coated or saturated with an overcoat of a "neat" melamine formaldehyde resin coating formulation which does not contain any abrasion resistant alumina particles or in the alternative contains abrasion resistant particles that are smaller than the particles used in the first coat (Abstract; Col. 6, lines 14-20.) The damage resistant decorative laminate may be produced either with or without an intermediate drying step between the initial coating and the subsequent overcoat (Col. 6, lines 28-32.) The coated decorative paper and at least one backing sheet is dried and then heat and pressure consolidated using conventional laminating techniques into a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance as well as a uniform appearance and excellent cleanability (Col. 6, lines 33-38.) Albrinck et al further teach that conventional high pressure decorative laminates are made of two essential layers, a core layer and a surface layer, wherein the core layer normally consists of a plurality of cellulosic sheets generally made from a kraft paper impregnated with a laminating resin (Col. 1, lines 19-25.) Placed above the core layer is the decorative layer which is generally an alpha cellulose paper impregnated with a melamine-formaldehyde resin (Col. 1, lines 31-35.) The laminates are used as surfacings for counter tops, table tops, furniture, store fixtures and the like (Col. 1, lines 65-66.)

9. Albrinck et al do not specifically teach the temperature and pressure at which consolidation is performed however, as admitted by the Applicant as prior art, it is well known in the art that high pressure laminates are produced at a temperature of 230-340°F and a pressure of 800-1600 psi (Page 3, lines 1-10.) Additionally, it is well known in the art that these laminate films are typically used as surface material for materials comprising wood, for non-limiting example, particle board, medium density fiberboard, composite panel and other wood-based materials (Page 2, lines 8-11.) Albrinck et al also do not specifically teach that the abrasion resistant particles are microspheres, and in particular alkali alumino silicate ceramic microspheres, that provide about 0.5 to 4.75% of the thermosetting resin after drying and provide a scratch resistance of at least about 2.5 Newtons as measured by the Teledyne Taber Scrach Tester. However, 3M and Zeelan teach that microspheres offer a variety of inherent advantages over many traditional irregularly shaped mineral fillers such as improved flow, lower resin demand, low viscosity/high filler loading, and reduced warpage and shrinkage (Page 2, Col. 1.) Further, 3M and Zeelan teach that ZEEOSPHERES™ Ceramic Microspheres are ideal options for hardness and abrasion resistance, gloss control, and corrosion resistance, or if you need a fine particle size filler. In particular, 3M and Zeelan teach an alkali alumino silicate ceramic microsphere which is commercially available as ZEEOSHERES W-610 and is a semi-transparent, white colored, fine particle size, high strength, high hardness ceramic microsphere. 3M and Zeelan also teach that ZEEOSPHERES™ Ceramic Microspheres can help reduce VOCs, and help improve hardness, corrosion resistance, and abrasion resistance of high solids industrial coatings. Therefore, based on the product information from 3M and Zeelan, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the ceramic

microspheres taught by 3M and Zeelan to provide the many advantages and enhancements over other mineral particles, for the abrasion resistant particle in the invention taught by Albrinck et al. Additionally, it would have been obvious to one having ordinary skill in the art to utilize routine experimentation to determine the optimum abrasion resistant material including readily available commercial products such as ceramic microspheres or polyethylene powders, and to determine the optimum weight percent of the abrasion resistant particles in the impregnating resin based on the particular abrasion resistant material and the desired scratch resistance for a given end use.

Response to Arguments

10. Applicant's arguments filed 5/16/01 have been fully considered but they are not persuasive. In response to Applicant's argument that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the invention taught by Albrinck et al is directed to abrasion-resistant decorative laminates formed by impregnating a substrate with a thermosetting resin comprising abrasion resistant particles to form a decorative laminate having improved scratch, mar, scrape and abrasion resistance. Though Albrinck et al do not teach that the abrasion resistant particles are spherical or "substantially spherical", as recited above, the teachings of Takahashi et al and 3M and Zeelan disclose that spherical particles provide a number of improvements or advantages

over many irregularly shaped mineral fillers in terms of coating materials or coating applications. Specifically, Takahashi et al teach that the spherical shape of the particles provides greatly improved abrasion resistance as compared with particles in an indeterminate form made of the same material. Hence, the secondary references provide the motivation to substitute spherical or "substantially spherical" particles for the indeterminate form or irregularly shaped particles taught by Albrinck. The Applicant further argues that the secondary references only teach applying the coating composition containing the spherical particles to the surface of a substrate and not impregnating the substrate therewith. However, the Examiner takes the position that when coating a porous material such as paper as taught by Takahashi that the coating composition does in fact penetrate the surface of the substrate or at least partially impregnates the substrate considering the substrate is porous. Further, it is noted that the secondary references were not relied upon to teach impregnating a substrate with a resin containing spherical particles but were relied upon to teach the improvement in terms of abrasion resistance when spherical particles are utilized as opposed to irregularly shaped or non-spherical particles. Therefore, for the reasons recited above in terms of improved abrasion resistance and additionally, given that the coating of a porous material such as a paper or wood substrate would result in the coating being at least partially impregnated into the porous substrate, there is a reasonable expectation of success with regards to the combination of references as recited above.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 703-308-0428. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5436 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

mrj
July 25, 2001

Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700